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NSC 215

Nutrition in Health and Diseases

Module 4

NSC 215 (Nutrition in Health and Diseases) Module 4

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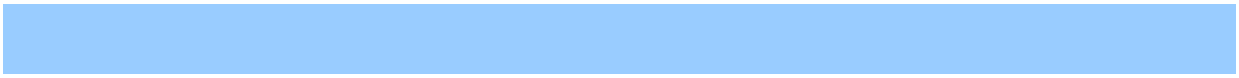

Module 4 Nutritionals

Unit 1 Assessment of Nutritional Status

1.0 Introduction

Since you have had some background knowledge in basic nutrition, it is important to apply this knowledge to improve your health and others. In this unit, you will be exposed to nutrition assessment of an individual. You ought to have had the knowledge of assessing the status of the nutritional status of an individual or group prior to providing information on ways to improve the nutritional status.

2.0 Objectives

At the end of this unit, you should be able to:

- define nutrition assessment
- list, at least three methods, of assessing the nutritional status of an individual
- calculate and interpret data obtained from anthropometric technique
- identify at least two usefulness of anthropometric indices.

3.0 Main Content

3.1 Techniques for Assessing Nutritional Status

Basically there are four methods of assessing nutritional status. These methods include anthropometric, biochemical, clinical and dietary survey techniques.

3.2 Anthropometric Technique

This method measures length of weight, height, middle upper arm, chest circumferences and skin fold thickness. The tools needed for anthropometric measurement are weighing scales, calibrated fibre tape, Herpenden's caliper and hightometer. Adults are usually assessed by using their height, body weight, skin folds,, waist and hip measurements. Middle upper arm, chest and head circumferences, weight gains are employed for children especially, under five children. The major anthropometric techniques to assess the adults are Body Mass Index (BMI), waist-hip ratio (WHR); Waist-height ratio (WHR) and skin folds thickness.

The BMI describes generalised body fatness for the adult. It is calculated by dividing the weight (kg) by height (m) squared. BMI for adults can be numerically classified as shown below:

< 18.5	-		underweight
18.5	-	24.9	Normal

25.0	-	29.9	overweight
30.0	-	39.9	obese
> 40.0			morbid obesity

Waist-Hip Ratio (WHR): WHR measures central or abdominal obesity. It is calculated by dividing the waist size by the hip measurement. In females WHR should be less than 0.81 for normal WHR and anything above 0.81 is an indicator of obesity. In males, the ratio should be less than 1, anything above this ratio is a sign for abdominal obesity. Waist-height ratio for both males and females should not be greater than 0.50.

3.3 Biochemical Assessment

This method requires the taking of blood, urine, stools samples, finger nails, or hair to determine the protein, fat, or vitamins contents, Biochemical assessment is one of the reliable techniques in assessing nutritional status, but it requires highly trained personnel and expensive tools.

3.4 Clinical Assessment

This method is carried out by professional health care providers. The technique requires thorough examination from head to toe. The physical examination takes note of the texture of the hair, whether fluffy, thick, dark, reddish or brownish, (children). The skin is also checked whether luster, flaky, scaly, wrinkled, or flabby. Tongue and conjunctiva are checked for paleness.

3.5 Dietary survey

This method is carved out by dietary recall or record. Dietary recall entails asking the individual to recall all that he or she has eaten for three or seven days. Dietary record, on the other hand is requesting the individual to record all that he or she eats on daily basis for three or seven days.

3.6 The Usefulness of Anthropometric Indices

Of all the techniques of assessing the nutritional status of an individual anthropometric is the cheapest and the most frequently used to detect hidden or known noncommunicable chronic diseases (NCCDs).

The usefulness of anthropometric technique includes the following:

- employing BMI technique, it gives possible onset of obesity among the adults by indicating overweight when the BMI is above 25 but less than 30.
- it helps to identify boys and girls that may be obese in adulthood.
- it helps to identify young boys and girls that may be underweight which may lead to poor academic performance and low productivity

For boys, 2 to 20yrs, BMI less than 14.8 is classified as underweight, while that of girls is 14.4 of the same age group. A BMI within 18.4 to 19.2 for boys (2 to 20 years) and 18.0-19.0 for girls (2 to 20 years) is classified as overweight. Overweight leads to obesity and

obesity is one of the main causes of non-communicable chronic diseases such as hypertension, stroke, diabetes and other heart diseases.

- the use of WHR that measures abdomen obesity has been associated with cardiovascular diseases, stroke, adult diabetes mellitus, forms of cancers, including colorectal, breast and prostate cancers.
- the risk of all these diseases increases in women when the WHR is above 0.8 and 1.0 for men.

The waist size is also an indicator of obesity. When the waist line for adult male is greater than 102 and 88cm for adult female, it is classified as obesity.

4.0 Conclusion

In this unit, you have learnt the meaning of nutrition assessment and the four methods of assessing the nutritional status of an individual. In addition you have also learnt how to calculate BMI and WHR. The interpretations of these anthropometric data should be known to you and you are ready to assess your own BMI and WHR and that of your family and friends. The anthropometric technique has also been described as the cheapest and easiest to apply to non-communicable chronic diseases.

5.0 Summary

This unit has described the various methods in assessing the nutritional status of an individual or a client. It has also shown that of the four methods, anthropometric technique has been singled out to be the cheapest and the mostly used to evaluate how well fed a person's nutrients are being met. The usefulness of anthropometric indices as predictors of non-communicable chronic diseases has also been illustrated in the text.

6.0 Self-Assessment Exercise

1. What is the difference between BMI and WHR?
2. A client's anthropometric data are as follows, weight is 75 kg, height is 1.75 m, hip is 91cm, and waist is 94 cm. based on the above calculate the BMI and WHR.

7.0 References/Further Reading

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Unit 2 Nutrition Education

1.0 Introduction

Since you have learnt how to assess the nutritional status of an individual especially, using anthropometric technique, you should have realised that there are some of your clients, friends or even family members that may be underweight, overweight or obese. They need to be informed of the hidden health problems for being in such condition. Nutrition education is the pivot to modifying or changing the nutritional habits that lead to any of the above nutritional status or any other form of nutritional deficiencies in the family or in the community.

In this unit, you will learn some of the essential terms in nutrition education, methods of dissemination and evaluating nutrition education. Knowledge and skills in nutrition education become very essential when you begin to learn about nutritional care for some of the NCCDs in subsequent units.

2.0 Objectives

At the end of this unit, you should be able to:

- differentiate the following nutrition information, nutrition
- education and nutrition counselling
- enumerate , at least three goals,of nutrition education
- describe two methods each in disseminating nutrition information
- and nutrition education
- list three barriers to effective nutrition education.

3.0 Main Content

3.1 Definitions in Nutrition Education

There are three essential definitions in nutrition education that you should know. These are nutrition information, nutrition education and nutritional counseling.

Nutrition Information is the dissemination of nutritional knowledge on different types of foods, their values, and their usefulness to the body. Nutrition information is imparting of nutritional knowledge to the clients in an attempt to improve their nutritional status.

Nutrition Education can be defined as a positive change in dietary habits of an individual or that of a community. Nutrition information is a means to an end, not an end itself. , Nutrition education is the outcome of effective information delivery. Nutrition education is all about seeing a positive change in nutritional behaviour of the client or the community.

3.2 Nutritional counseling

Is the process by which the client (patient) is actively and effectively helped by the nutritionist or a dietician on how appropriate the significant role that adequate nutrition plays in healthy and in sickness.

Nutritional counselling serves two purposes. It helps the counsellor to understand the nutritional felt and unfelt needs of the clients and also permits the clients to commit himself or herself to total care of the counselor on regular basis till remarkable change in dietary habits is observed.

3.3 The Goals of Nutrition Education

The cardinal goal of nutrition education is to create community awareness as well as to facilitate the need for healthful nutritional practices. This goal can only be achieved if the community health worker, first and foremost, learn about the community by doing community diagnosis. This is important because such a diagnosis will reveal the major nutritional problem of the community and possible blocking factors. Other nutritional goals include:

- assisting the community to identify false nutritional advertisement
- encouraging the community or individual to eat foodstuffs that will promote, sustain and maintain quality health
- giving of nutrition information in the form of pamphlets, radio or television/short talks to the community about the importance of adequate nutrition to total health
- motivating the community to consider home gardening in order to reduce family food expenditure
- motivating the community for nutrition action such as establishing nutrition centres where mothers can come together for exchanging ideas about nutritional care for the growing infants
- encourage the community to consider monitoring the patterns of weight gains by the infants, the adolescents and the elderly.

3.4 Methods of Disseminating Nutrition Information and Nutrition Education

The health worker has a choice of methods to be used in disseminating nutrition information or carrying out nutrition demonstration. It all depends on financial background, types of audience and the competence of the presenter.

In situation where money is not a constraint, the mass media can be used for the two to inform the public at large about the right foodstuffs that make up an adequate diet. Other methods include:

Group Discussion: This method can be formal or informal as long as the participants are aware of the nutritional problems at hand in the community.

Peer Nutrition Education: Peer to Peer nutrition education is very effective because both the presenters and learners are of equal rank. Free flow of information exists between them.

The nutrition educator, however, has to train the presenters before he or she becomes peer nutrition educator.

Role playing is another form of disseminating nutrition information. Through role playing or activity, nutrition messages can be delivered.

Story telling: Story telling on nutrition is another exciting and educative method but books on this are very scarce.

Training of leaders in the Community: Training of church, mosque, market and traditional leaders on nutrition is also a vital tool because they have a wider audience.

Training of journalists, radio and television commentators: The training of these special groups on nutrition issues will also help in disseminating nutrition information because they too have a wider audience.

Food demonstration: Of all the methods listed above, food demonstration is the most effective. The learners are exposed to practical food demonstration. Since nutrition education is to change people's nutritional behaviour. This can only be achieved if they see and practice what they should do later in their respective homes. After all, as the Chinese saying "What we hear – we forget

"What we see – we remember

"What we do – we know"

Thus, you should not be satisfied with talking alone but include practical demonstration.

3.5 Barriers to Effective Nutrition Education

Some of the barriers include:

- poor knowledge of the community
- prior to giving nutrition education, the educator must be familiar with general occupation of the people concerned, types of food crops grown, level of education, food preferences, food habits, food prices, current nutritional problems at the family or societal level
- poor planning of nutrition education programme
- poor communication skills at the community level
- lack of resources/human and materials.

4.0 Conclusion

Since you have learnt about nutrition information and nutrition education in this unit, you should be able to distinguish between the two terms. This unit has also dealt with the goals and various methods of nutrition education. Of all the methods of delivering nutrition education, food demonstration appears to be the most effective. Barriers to effective nutrition education have also been discussed.

5.0 Summary

This unit has described the uniqueness of nutrition education in the attainment of adequate nutrition. The differences between nutrition information and nutrition education have been illustrated. Methods of effective education and their barriers are also well discussed.

6.0 Self-Assessment Exercise

1. What is the difference between nutrition education and nutrition information?
2. List three of the barriers to effective nutrition education

7.0 References/Further Reading

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Unit 3 Nutritional Care in Diseases

1.0 Introduction

In the earlier units, we have leant about the importance of food nutrients in the promotion of quality health of human beings. The needs of human body to maintain sustain and promote wellbeing include adequate intake of protein, carbohydrates, vitamins, minerals, fats and oils. In some cases where excess of some of these nutrients (protein, fats and carbohydrates) are taken, it may lead to some disease conditions. The use of diet in the treatment of these disease conditions is known as diet therapy or the use of diet in caring for disease condition. This unit is focusing on the use of diet in caring for some of the non-communicable chronic disease conditions.

2.0 Objective

At the end of this unit, you should be able to:

- explain the role of nutritional care in disease

3.0 Main Content

3.1 Aims of Diet Therapy

The primary aim of diet therapy is to ensure that the clients consume diets that will enhance optimum provision of adequate nutrients during the disease status. Other aims of diet therapy include:

- maintenance of normal nutrition
- restoration of lost nutrients
- correcting nutrients deficiency or excess
- adjustment of food intake to match body's capability to make good use of the nutrients
- reduction of the workload on a diseased organ
- facilitating body weight changes.

3.3 Types of Diets

Since the major objective of diet therapy is maintaining or restoring adequate nutrition for patients, various means are attempted to achieve this goal. The methods employed in achieving adequate nutrition for patients include the following:

- Modification of the normal diet for therapeutic purposes. The normal diet of a patient can be modified for texture and consistency to meet the individual's specific health disorders. Dietary modifications for a diabetic patient, for example involve the energy, protein, carbohydrates and fat contents of the diet.

- Liquid Diets. There are two types of liquid diets. The clear "liquid" diet and "fall fluid" or "full" liquid diet". The clear liquid diet is frequently used in patients that are vomiting or suffering from diarrhea to ensure the maintenance of fluid and electrolyte balance. Examples of clear fluid diet include ginger ale, clear fruit juices, fat free meat, or fish broth, and water. Clear fluid diets should be used for few days.
- Full Liquid Diet. The full liquid diet is usually prescribed to patient, that are having difficulties in chewing food, post-operative clients that have been put on clear fluid diet and those patients with acute gastrointestinal upset. This diet is usually made of liquids and foods that are liquefied at body temperature. Examples of full liquid diet are fruit juices, milk, strained grains, ice-cream and pureed vegetables.
- Soft Diet. This is used for those who have difficulties of chewing foods. It is also called dental soft diet. The major modification in this diet is in the texture. Boiled or fried meats, poultry, fried fish, smoked/dried fish and hard boiled rice or bean should not be used for soft diet.
- Soft Fiber – Restricted Diet. This diet is usually recommended for post-operative or patients with acute gastrointestinal disorder who have been on a full fluid diet. Some of the foods to be avoided for this type of diet include fresh leafy vegetables, fruits, with tough skin, whole maize, beans with the skin, flavouring agents (pepper, garlic, ginger), fried meat, fish, egg, yam and plantain.

4.0 Conclusion

Since you have learnt about diet therapy in this unit, you should be able to define diet therapy and describe the aims of diet therapy. This unit has also discussed various types of diets and their usage for different disease conditions.

5.0 Summary

This unit has provided information on nutritional care in disease conditions. It has also described the different types of diets and their uses for different disease conditions.

6.0 Self-Assessment Exercise

1. List four aims of diet therapy.
2. Differentiate between full liquid and soft fiber-restricted diets with specific disease condition.

7.0 References/Further Reading

Smith, I.F.& Ojofeitimi, E.O. (1995). Nutrition Care in Disease. In: *Nutrition and Diet Therapy for Health Care Professionals in Africa.* Ibadan, Nigeria: Y- Book. Pp. 117-118.

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Unit 4 Nutrition Care for Protein-Energy Malnourished Children

1.0 Introduction

When diet is deficient in both protein and energy it is referred to as Protein Energy Malnutrition (PEM). This is a disease that is most common among the children. This unit aims at describing PEM and the use of locally available food sources in the management of the disease.

2.0 Objectives

At the end of this unit, you should be able to:

- define the term Protein Energy Malnutrition
- describe the patterns of Protein Energy Malnutrition (PEM)
- explain the prominent features of PEM
- plan a day menu for a protein energy malnourished child.

3.0 Main Content

3.1 Definition of Protein Energy Malnutrition (PEM)

PEM is defined as an umbrella word that covers a spectrum of nutritional deficiencies ranging from protein to energy due to under nutrition. The patterns of PEM are kwashiorkor, marasmus and marasmic-kwashiokor. Kwashiorkor is due to lack of enough body building a food called protein that is required for strong muscles, blood and skin. They usually have oedema, moon face and look miserable. Marasmus is the term given to those children who do not have enough food of any kind.

Those children are usually looking anxious and hungry. Marasmus-kwashiokor children are those that have both signs of kwashiorkor and marasmus. Undernourished children are those that are just beginning to show signs on kwashiorkor on marasmus. Their body weights are usually greater than that of other patterns of PEM, but still below the normal standard weight.

3.2 Diet for Protein Energy Malnourished Children

Prior to learning about dietary treatment for PEM, it is important to define the term PEM, and to understand the prominent features of PEM.

3.3 Features or Patterns of PEM

Prominent pattern of PEM is shown in the table below:

Table 3.3: Prominent Features PEM

	Marasmus	Kwashiokor	Marasmic kwashiorkor	Under nutrition
A. Age	1-2 years	1-4 years	1-4 years	1-4 years
B. Essential features				
Oedema	-	+++	+	-
Severe weight loss	+++	+	+	-
Muscle wasting	+++	+	+	-
Enlarged fatty liver	-	+++	+	-
Severely dehydrated	+++	-	+	-
Anorexia	-	++	+	-
Growth retardation	+++	++	++	+
Skin changes	+++	++	+	Often
Hair changes	++	+++	+	Often
Apathy	+	++	+	-

Sources: Jellife, W.B., WHO monographs series No. 53 and Whitney *et. al.* (1998). pp. 200

Key: ++ = very prominent

++ = prominent

+ = present

- = not present

3.4 The Use of Local Fluid Mixture for PEM

Usually, there is a loss of appetite among the children suffering from PEM particularly during the early management of PEM. Kwashiokor and marasmic-kwashiorkor need to be given enough energy intake of 58.3kcal/kg/day before they start to lose oedema fluid. The recipes for local fluid mixtures are powdered full cream milk (23kg), vegetable oil (50g), pure cane sugar (50g), corn pap (750g). Mix all ingredients well and make up to 1 litre with previously boiled and cooled water. The full –cream powdered milk can be replaced with any available protein source- egg, groundnut paste/powder, crayfish, fish powder or soybean milk.

3.5 The Use of Mixed Diets for PEM

Evidence abounds in the literature that malnourished child that is over seven months and above can be effectively managed on local available complementary protein based diets. The recipes of these complementary proteins are: Breakfast: corn pap/guinea pap/wheat pap with akara (seasoned and fried bean balls) or moinmoin (steamed bean pudding). The contents of them include any of the grains, black eyed beans, pepper, onion, crayfish, palm-oil, salt, snack- mashed boiled yam, with palm oil, crayfish and a piece of banana.

Lunch: Rice with beans. The contents of the meal include rice, beans, pepper, onion, fresh tomatoes paste, palm oil, salt, crayfish.

Dinner: Eko(Agidi), beans, with vegetable soup. The contents of the meal include fermented corn flour, crayfish, smashed beans, fresh tomatoes, onion, palm oil, dried leafy vegetables.

4.0 Conclusion

In this unit, PEM has been defined and described as one of the most common childhood diseases. The patterns of PEM together with the prominent features have also been discussed. By now you should be able to distinguish between a marasmic and kwashiorkor child. The use of locally available nutrition foodstuffs in the management of PEM has also been explained.

5.0 Summary

In this unit, the use of diet in the caring for protein energy malnourished children has been described. Definition and prominent features of PEM have also been described. The unit ends with specific locally available foodstuffs for the management of the disease.

6.0Self-Assessment Exercise

1. Define Protein- Energy Malnutrition (PEM).
2. What are the Patterns of PEM?
3. What are the features of marasmic patient?

7.0 References/Further Reading

King, F.M., King, M.H., Morley, D.C, Burgess, H.J.L., and Burgess, A.P. (1982). *Nutrition for Developing Countries*. London: Oxford University Press. Pp. 2.4-2.7.

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Unit 5 Nutritional Care for Hypertensive Patient

1.0 Introduction

Cardiovascular disease, such as hypertension has been classified as one of the leading causes of death in both developed and developing countries world over. In fact, hypertension has been described as a silent killer because it gradually increases the severity of heart attack without the patient having obvious signs of the discussed.

In this unit, the definitions of hypertension, its risk factors, types, aims of nutritional support for a hypertensive patient and principles for selection of meal planning will be discussed.

2.0 Objectives

At the end of this unit, you should be able to:

- define hypertension in your own words
- differentiate between mild and moderate hypertension
- list, at least three risk factors, for hypertension
- describe two aims of nutritional support for a hypertensive patient
- identify two of the principles for planning a meal for hypertensive patient.

3.0 Main Content

3.1 Diet Treatment for Hypertensive Patient

The main subject is diet in the treatment of hypertension. The definition of and types of hypertension, its major risk factors together with the aims of nutritional support should be understood before diet prescription for the patient.

3.2 Definition of Hypertension

Taber's Cyclopedic Medical Dictionary, defines hypertension as "a condition in which the patient has a higher blood pressure than judged to be normal". In general when the systolic pressure is above 140mm of mercury or the diastolic is above 90mm, such a person can be considered as a hypertensive patient.

Hypertension can be grouped under two headings: essential and malignant hypertension. Essential hypertension or high blood pressure is developed without apparent causes. The other name to describe it is primary hypertension. Malignant hypertension is not common like the essential one. It usually occurs more in younger individuals and it is characterised by extreme elevations of blood pressure, blurring of vision and headache.

Hypertensive patients can also be classified as mild, moderate and severe hypertension depending on the blood pressure readings. Mild hypertensive patients are those whose

readings are 140/90. Moderate individuals are those whose readings are between 140 to 180 systolic and 90/100 diastolic. Severe hypertension patients are those above 180 systolic and 100 diastolic.

3.3 Major Risk Factors of Hypertension

The major risk factors for hypertension are genetic factors, obesity, high sodium intake, alcohol, smoking, stress, and diet.

Of all the risk factors in the essential hypertension, dietary habit is very important because it is this dietary habit that if modified shall lead to reduction of weight gain, and salt intake. Both reduction in weight and salt intake will significantly reduce blood pressure elevation.

For parents with family history of essential hypertension, there is a fifty percent probability that their offspring may develop the disease.

Excessive salt or sodium chloride intake is another risk factor for hypertension. Interestingly, foodstuffs that are high in sodium are low in potassium. A low intake of potassium has also been reported to increase the risk of this disease.

Smoking and alcohol are also risk factors for hypertension. Smoking increases the risk of unpleasant long term outcomes of hypertension, heart attack and stroke. Moderate regular intake of alcohol has also been reported to raise the blood pressure. Stress is another vital risk factor that may elevate blood pressure. Regular and uncontrolled stress in the form of physical and mental activities needs to be regarded as an important issue in the treatment of hypertension.

3.4 Aims of Nutritional Support for Hypertensive Patients

The following are the aims of nutritional support for hypertensive patients:

- maintaining of an ideal body weight
- achieving an appropriate sodium/potassium ratio in body fluids through dietary restrictions and/or supplementations
- Educating the patient on the role of non-drug therapies, such as weight control, sodium restriction, potassium, "supplementation" and reduction of alcohol intake in the maintenance of a "healthy" blood pressure.

3.5 Principles of Selection and Meal Planning for Hypertension Patients

One of the main principles for meal planning for hypertensive patient is the restriction of salt or sodium chloride. This reduction can be grouped according to the degree of hypertension, mild, moderate and severe.

Those with mild hypertension should restrict their sodium to 2g/day; moderate and severe should restrict theirs to 1g/day and 0.5g/day respectively.

Strategies to cut down salt intake include:

- prepare food with sodium free spices such as curry, garlic, ginger, thyme
- cooking with small amount of added salt
- avoiding salt at the table
- read food labels with particular reference to salt quantity.

Some foods should be prescribed or used with caution because of high sodium content. These foodstuffs include:

- Starch/bread list. Ready-to-eat cereals, bread, cream crackers, snack chips, baked beans, and canned vegetables with salt, biscuits, cakes, salted pop corn,
- Meat list: Dried salted codfish and other salted meat or fish (sardine), smoked fish.
- Vegetable list: All canned vegetables unless canned without salt.
- Fruit list: All fruits canned in saline.
- Milk list: Ice cream, milk shakes.
- Fat list: salted butter and margarine, roasted and salted nuts and salad dressing
- Other food item is tomato ketchup.

An example of a day's meal controlled for sodium, protein, phosphorous, potassium is taken from Smith and Ojofeitimi 1995.

Breakfast. Thick corn pap 4tsp salt free

Moinmoin (with ¼ tsp sugar, ½ tsp of oil)

Lunch: Eba (Dough from garri) 4 tsp with okro soup (1/2 tbs) meat (100z) palm oil, 100z pineapple.

Dinner: Plain boiled rice (4 tsp) stew (onion ¼ tbs, fresh tomato ¼ tbs vegetable oil 100z. This sample menu provides more potassium (2347.6mg) than sodium (105.55mg). The sodium has been very restricted even less than 115 milligrams minimum requirements. This calculation is based on the use of food composition table in nutrition text books.

4.0 Conclusion

In this unit, you have learnt about hypertension, its definition, types and predisposing factors. The aims of nutritional support for hypertensive patients have also been highlighted.

The principles guiding meal planning for hypertensive patient was also discussed. Here major emphasis was on salt restriction and ensuring intake of foodstuffs rich in potassium. An example of a salt restricted meal has also been shown in this unit. The sample menu gives a total 105.55mg of salt and 2347.6 mg of potassium.

5.0 Summary

In this unit, the nutritional care for hypertensive patients has been discussed. The types of hypertension and its grouping have also been explained. The risk factors for hypertension and aims of nutritional care for the disease were also listed. A sample of a meal plan for a hypertensive patient has also been discussed and analysed for salt and potassium.

6.0 Tutor- Marked Assignment

1. With specific examples, differentiate between mild and moderate hypertension.
2. Describe two aims of nutritional support for a hypertensive patient.

7.0 References/Further Reading

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Unit 6 Nutritional Care for Diabetic Patients

1.0 Introduction

Diabetes mellitus is the commonest endocrine disease that is rapidly increasing in developing countries, especially in Nigeria. It is one of the most serious public health problems because of its morbidity and complications. Diabetes can also be described as results from a problem with the way the body handles the end product of carbohydrates (glucose). The hormone, called, insulin helps the body to enter glucose into the cells that make up the organs and muscles. This hormone is produced by the pancreas, a gland that lies behind the stomach. When the level of glucose in the blood stream builds up, passes through the kidney and spills into the urine, diabetes is observed. This disease is usually noticed usually at the beginning of middle age in childhood or adolescence.

In this unit, you will learn about types of diabetes, diets and diabetes and strategies for the control of type II diabetes.

2.0 Objectives

At the end of this unit, you should be able to:

- define diabetes and classify the disease
- differentiate between insulin – dependent (Type I) and non insulin-dependent (Type II) diabetes
- list at least three warning signs of diabetes
- identify predisposing factors for diabetes
- list at least two goals of nutritional therapy for diabetes
- describe, at least three strategies each,for the two main types of diabetes
- describe the recommended nutritional plan for adult diabetes.

3.0 Main Content

3.1 Dietary Care for Diabetic Patients

In this unit, the role of diet in the causation, treatment and prevention of diabetes will be examined at the household level. Thus, definition of the disease and its classification will also be explained.

3.2 Definition and Classification of Diabetes

Diabetes is defined as a disorder of carbohydrate metabolism characterised by hyperglycemia (excess glucose in the blood) and glucosuria (sugar in the urine) that result as an inadequate production or utilisation of insulin.

3.2.1 Classification of Diabetes

Majorly, there are two types of diabetes: Insulin-dependent diabetes mellitus (IDDM) and Non-Insulin dependent mellitus (NIDDM). The IDDM is now known as Type 1 diabetes which is attributed to either destruction or reduction in number of beta cells. This results to lack of insulin or inadequate insulin to control blood glucose. This type of diabetes occurs at any age but mostly among children. It is usually diagnosed before the age of 20 years. The NIDDM or Type 2 usually occurs after 40 years of age. This Type 2, is usually due to inadequate supply of insulin or the insulin receptor response is decreased. The net result is hyperglycemia and glucosuria.

3.3 Diet and Diabetes

Diet is the keystone of treatment, especially type 2 diabetes mellitus. There is no specific 'diabetic diet", in controlling diabetes. The diet depends on individual. An overweight or obese individual that has been diagnosed as type 2 diabetic patients, the emphasis should be placed on weight loss. The plan for dietary intake will include reduction of certain nutrients such as carbohydrates and fats in such a way that the individual lose weight and yet still having adequate diet. The aim of such a diet is to help the body make better use of carbohydrates. Such diet should be low in fats, especially saturated fats (palmitic and stearic acids from animal proteins).

Planning a diet for diabetic patient depends on number of factors that include:

- the level of sugar in the blood
- the need to lose weight and how much
- the level of insulin available
- the age and the normal activities, and
- overall assessment of health.

3.4 Warning Signs of Type II Diabetes

There are some vital signs that will occur to suggest the development of this disease before apparent symptoms appear. These include:

- individuals with family history of diabetes
- individuals with obstetrical history of overweight babies or with repeated still births or miscarriages
- individuals with spontaneous hypoglycemia that result to weakness, marked perspiration and fainting.

The main symptoms of Type II diabetes are increase in thirst, constant hunger, frequent urination, loss of weight, itching around the genital area, marked fatigue, changes in vision and slow healing of cuts and scratches.

3.5 Predisposing Factors for Diabetes Type 2

The predisposing factors for Type 2 diabetes are family history of diabetes, excess weight (being overweight appears to increase the body's demand for insulin), age (the chances of

developing the disease increase with age), gender (women are more likely to get the disease than men after the age of 30 and between the ages of 45 and 65) and inactivity. This is because from 45 years and above, levels of activities decrease and sedentary life styles become prominent especially after the age of 60 years. Sedentary lifestyles are more likely to develop the disease because physical in activities seem to make the available insulin work lesser.

3.6 The Goals for Nutritional Therapy of Diabetes

The specific goals for nutritional therapy of diabetes include:

- the achievement of physiologic blood glucose level;
- the maintenance of desirable plasma lipids.
- reduction of body weight for obese persons with NIDDM and maintenance of an acceptable body weight.
- reduction of possibility of diabetes complications such as retinopathy (disorder of the retina), nephropathy (disease of the kidney), and neuropathy (disease of the nerves).
- the retardation of the development of a atherosclerosis (degeneration of blood vessels caused by a deposit of fatty materials along the lining of the wall of a blood vessel).
- establishing and maintaining consistent meal timing.
- improvement in overall health.

3.7 Dietary Strategies for the Two Main Types of Diabetes

Dietary strategy	Obese patients who do not require insulin	Insulin-dependent anon obese patients
(i). Decrease calorie	Yes	No
(ii). Protect or improve Beta –cell function	Very urgent Priority	Seldom Important
(iii). Day to day consistency in intakes of calories, carbohydrates, protein, and fat	Not crucial average caloric intake is kept low	Very important
(iv). Day to day consistency in ratios of carbohydrates, protein and fat for each feeding	Not crucial	Desirab,e
(v). Consistency in meal planning	Not crucial	Very important
(vi). Extra food for unusual exercise	Not usually appropriate	Usually appropriate
(vii). Use of food to treat, abort or prevent hypoglycemia	Not necessary	Important

(viii). During complicating illness, provide small frequent feeding IV carbohydrate to prevent starvation ketosis	Often not necessary because of resistance to ketosis	Important.

Source: Smith, I.F. and Ojofeitimi, E.O. (1995)

3.8 Recommended Nutritional Plan for Adult Diabetic Patients

As discussed in Unit 3.3, diet is an indispensable treatment of type 2 diabetes worldwide. The diets being used are those developed and prescribed by the American Diabetes Association (ADA). The recommended nutritional plan is described below:

Table 3.8 Nutritional Recommendations for Type 2 Diabetes Patients

Component	Recommendations of Diabetes Association
Carbohydrate (CHO)	55-60%, Unrefined CHO emphasised
Protein	12-20%, Adult Recommended Daily Allowance should be 0.8g/kg body weight
Fat	Less than 30%
Cholesterol	Less than 300mg/day
Fiber	Less than 25g/1000 calories maximum of 50g/day

Source: American Diabetic Association and American Diabetic Association: Healthy Foods Choices. Chicago, 1980.

It should be noted from the above table that the diet should be adequate not only in carbohydrates, proteins and fats but also vitamins. It is also important to note that if the individual is overweight or obese, weight loss is essential and this plan guarantee weight loss. The table should be used with information given in Unit 3.7.

4.0 Conclusion

In this unit, you have been exposed to the importance of diet in the management of the two main types of diabetes. The unit has also defined and classified diabetes accordingly. The warning signs of diabetes have been described and also predisposing factors as to the causation of the disease have explained. Both the goals for nutritional therapy of diabetes and dietary strategies have been discussed. Finally, recommended nutritional plan for adult diabetic patients according to American Association of Diabetes has been presented as guideline to prepare diets for adult diabetic patients.

5.0 Summary

In this unit, you have learnt about diabetes as a major health problem in both young ones and adults. This incidence of the disease continues to increase in Nigeria and has its major management in the application of dietary knowledge in the maintenance of blood glucose and regular monitoring of weight. The major concern about the disease is the prevention of

its health complication. Nutritional recommended plan has been provided as guidelines to plan diet for adult patients.

6.0 Self-Assessment Exercise

1. What are the differences between Type I and Type II diabetes mellitus?
2. Describe the nutritional recommended plan for adult diabetic patients in your own words.

7.0 References/Further Reading

American Diabetic Association and American Dietetic Association. Healthy Foods Choices Chicago, 1980.

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